Charles Darwin University

Final Examination

Family Name						
Given Name/s						
Student Number						
Teaching Period	Semester 1, 2019					

BIS551 – Business Intelligence and Data Mining	DURATION	
	Reading Time:	10 minutes
	Writing Time:	180 minutes

INSTRUCTIONS TO CANDIDATES

This examination has two (2) sections:

Section A: Suggested Time: 70 mins	Short Essay Questions: Answer ALL four questions Marks as indicated on paper. (Total marks = 40)
Section A: Suggested Time: 110 mins	Case Study Questions: Answer ALL two questions. Marks as indicated on paper. (Total marks = 60)

EXAM CONDITIONS

You may begin writing from the commencement of the examination session. The reading time indicated above is provided as a guide only.

This is a RESTRICTED OPEN BOOK examination

No calculators are permitted

No handwritten notes are permitted

No dictionaries are permitted

ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED
Lecture Textbook/s (Annotated Permitted)	1 x 16 Page Book 1 x Scrap Paper

THIS EXAMINATION IS PRINTED DOUBLE-SIDED.

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Section A: Short Essay Questions
Total No of Marks for this Section: 40

This section should be answered in the Answer Booklet provided.

Marks for each question are indicated. Suggested time allocation for Section A: 70 mins

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Question A1 (10 marks):

Business applications can be programmed to act on what real-time BI systems discover. Describe two approaches to the implementation of real-time BI (2 marks)

Support your answers by giving one specific example for each approach (8 marks).

Question A2 (10 marks):

In no more than 10 lines, discuss in details the aims (2 marks), objectives (3 marks) and the methodology (4 marks) of your semester project.

Question A3 (10 marks):

Discuss the main differences between Business Intelligence (BI) and Decision Support Systems (DSS) (2 marks).

Give an example of a scenario where BI is used and state why it is better than DSS and another example where DSS is used and state why it is better than BI (8 marks).

Question A4 (10 marks):

Discuss, by giving examples, the two similarities (5 marks) and two differences (5 marks) between data mining technique versus text mining technique.

Section B: Case Study Questions
Total No of Marks for this Section: 60

This section should be answered in the Answer Booklet provided.
Marks for each question are indicated. Suggested time allocation for Section B: 110 mins

Question B1 (30 marks)

Delta Lloyd Group Ensures Accuracy and Efficiency in Financial Reporting

Delta Lloyd Group is a financial services provider based in the Netherlands. It offers insurance, pension, investing, and banking services to its private and corporate clients through it three strong brands: Delta Lloyd, OHRA, and ABN AMRO insurance. Since its founding in 1807, the company has grown in the Netherlands, Germany, and Belgium, and now employs around 5,400 permanent staff. Its 2011 full-year financial reports show €5.5 billion is gross written premiums, with shareholders' funds amounting to €3.9 billion and investments under management worth nearly €74 billion.

Challenges
Since Delta Lloyd Group is publicly listed on the NYSE Euronext Amsterdam, it is obligated to produce annual and half-year reports. Various subsidiaries in Delta Lloyd Group must also produce reports to fulfil local legal requirements for example, banking and insurance reports are obligatory in the Netherlands. In addition Delta Lloyd Group must provide reports to meet international requirements, such as the IFRS (international financial reporting standards) for accounting and the EU solvency I directive for insurance companies. The data for these reports is gathered by the group's finance department, which is divided into small teams in several locations. The data is then converted into XML so that it can be published on the corporate Web site.

Importance of Accuracy
The most challenging part of the reporting process is the "last mile"- the stage, at which the consolidated figures are cited, formatted, and described to form the final text of the report. Delta Lloyd group was using Microsoft excel for the last-mile stage of the reporting process. To minimize the risk of errors the finance team needed to manually check all the data in its reports for accuracy. These manual checks were very time-consuming. Arnold Honig, team leader for reporting at Delta Lloyd Group, comments: "accuracy is essential in financial reporting. Since errors could lead to penalties, reputational damage, and even a negative impact on the company's stock price. We needed a new solution that would automate some if the last-mile processes and reduce the risk of the manual error."

Solution
The group decided to implement IBM Cognos Financial Statement Reporting (FSR). The implementation of the software was completed in just 6 weeks during the late summer. This rapid implementation gave the finance department enough time to prepare a trial draft of the annual report in FSR, based on figures form the third financial quarter. The successful creation of this draft gave Delta Lloyd group enough confidence to use Cognos FSR for the final version of the annual report, which was published shortly after the end of the year.

Results
Employees are delighted with the IBM Cognos FSR solution. Delta Lloyd Group had divided the annual report into chapters, and each member of the reporting team is responsible for one chapter. Arnold Honig says," since employees can work on documents simultaneously, they can share the huge workload involved in report generation. Before the reporting process was inefficient, because only one person could work on the report at a time."

Since the workload can be divided up, staff can complete the report with less overtime. Arnorl Honig comments: "previously, employees were putting in 2 weeks of overtime during the 8 week required to generate a report. This year, 10 members of staff involved in the report generation process worked 25 percent less overtime, even though they were still getting used to the new software. This is a big win for Delta Lloyd Group and its staff." The group is expecting further reductions in employee overtime in the future as staff becomes more familiar with the software.

Accurate reports

The IBM Cognos FSR solution automated key stages in the report-writing process by populating the final report with accurate, up-to-date financial data. Wherever the text of the report needs to mention a specific financial figure, the finance team simply inserts a "variable" – a tag that is linked to an underlying data source. Wherever the variable appears in the document FSR will pull the figure through from the source into the report. If the value of the figure needs to be changed, the team can simply update it in the source, and the new value will automatically flow through into the text, maintain accuracy and consistency of data throughout the report.

Arold Honig comments, "The ability to update figures automatically across the whole report reduces the scope for manual error inherent in spreadsheet-based processes and activities. Since we have full control of our reporting processes, we can produce better quality reports more efficiently and reduce our business risk." IBM Cognos FSR also provides a comparison feature, which highlights any changes made to reports. This feature makes it quicker and easier for users to review new versions of documents and ensure the accuracy of their reports.

Adhering to Industry Regulations

In the future, Delta Lloyd Group is planning to extend its use of IBM Cognos FSR to generate internal management reports. It will also help Delta Lloyd Group to meet industry regulatory standards, which are becoming stricter. Arnold Honig comments, "The EU solvency II directive will come into effect soon, and out solvency II report will need to be tagged with eXtensible Business Reporting language [XBRL]. By implementing IBM Cognos FSR, which fully supports XBRL tagging, we have equipped ourselves to meet both current and future regulatory requirements."

Source: Case adopted from Ramesh, S (2017) "Business Intelligence, A Managerial Perspective on Analytics", 4th Edition

Answer All questions

1. Discuss how did Delta Lloyd Group improve the accuracy and efficiency in financial reporting? (10 marks)
2. Discuss the challenges the proposed solution, and the obtained results in the case? (10 marks)
3. Discuss why complying with industry regulations was important for Delta Lloyd Group? (10 marks)

Question B2: (30 marks)

Predicting Customer Buying patterns- The Target story

In early 2012, an infamous story appeared concerning Target's practice of predictive analytics. The story was about a teenage girl who was being sent advertising and coupons by Target for the kinds of things that a new mother-to-be would buy from a store like Target. The story goes like this: An angry man went into a Target outside of Minneapolis, demanding to talk to a manager: “My daughter got this in the mail!” he said. "She's still in high school, and you're sending her coupons for baby clothes and cribs? Are you trying to encourage her to get pregnant?" The manager didn't have any idea what the man was talking about. He looked at the mailer. Sure enough, it was addressed to man's daughter and contained advertisements for maternity clothing, nursery furniture, and pictures of smiling infants. The manager apologized and then called a few days later to apologize again. On the phone, though, the father was somewhat abashed. "I had a talk with daughter," he said. "It turns out there's been some activities in my house I haven’t been completely aware of. She's due in August. I owe you an apology."

As it turns out, Target figured out a teen girl was pregnant before her father did! Here how they did it. Target assigns every customer Guest ID number (tied to their credit card, name, or e-mail address) that becomes a placeholder that keeps a history of everything they have bought. Target augments this data with any demographic information that they had collected from them or bought from information sources. Using this information, Target looked at historical buying data for all the females who had signed up for Target baby registries in the past. They analysed the data from all directions, and soon enough some useful patterns emerged. For example, lotions and special vitamins were among the products with interesting purchase patterns. Lots of people buy lotion, but what they noticed was that women on the baby registry were buying larger quantities of unscented lotion around the beginning of their second trimester. Another analyst noted that sometime in the first 20 weeks, pregnant women loaded up on supplements like calcium, magnesium, and zinc. Many shoppers purchase soap and cotton balls, but when someone suddenly starts buying lots of scent-free soap and extra-large bags of cotton balls, in addition to hand sanitizers and washcloths, it signals that they could be getting close to their delivery date. In the end, they were able to identify about 25 products that, when analyzed together, allowed them to assign each shopper a "pregnancy prediction" score. More important, they could also estimate a woman's due date to within a small window, so Target could send coupons timed to very specific stages of her pregnancy.

If you look at practice from a legal perspective, you would conclude that Target did not use any information that violates customer privacy; rather, they used transactional data that almost every odder retail chain is collecting and storing (and perhaps analyzing) about their customers. What was disturbing in this scenario was perhaps the targeted concept: pregnancy. There are certain events or concepts that should be off limits or treated extremely cautiously, such as terminal disease, divorce, and bankruptcy.

Source: Case adopted from Ramesh, S (2017) “Business Intelligence, A Managerial Perspective on Analytics”, 4th Edition

Answer ALL questions

1. What do you think about data mining and its implication for privacy? (5 marks)
2. Discuss the threshold between discovery of knowledge and infringement of privacy? (5 marks)
3. Did Target go too far? Shortly explain (3 marks)
4. Did Target do anything illegal? Shortly explain (2 marks)
5. What do you think Target should have done? Explain your answer (8 marks)
6. What do you think Target should do next (quit these types of practices)? (7 marks)

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